UNIVERSITY OF LONDON

DEPARTMENT OF BACTERIOLOGY.

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2nd.December,1951.

Dear Dr.Cavalli,

About 18 months ago,when you let me have two of the recombining types of K 12 mutants,I told you I would let you know if I made any progress with them. I am now enclosing a draft letter to Nature(which I have since had to reduce to 2/3 its length) which may be of interest to you. In brief,it shows that 58-161 can still induce prototroph formation with W 677 after "sterilisation" with streptomycin,while similar treatment of W 677 renders it quite incapable of participating in recombination. Since getting this off my chest,I have confirmed that small,sub-mutagenic doses of UV radiation greatly stimulates recombination rates,and shown that the effect of the radiation is on 58-161. If this mutant is irradiated, washed,resuspended in broth at 37°C and mixed with a young broth culture of unirradiated W 677,very much larger numbers of prototrophs arise than with an otherwise similar but unirradiated mixture. On the other hand,when W 677 alone is treated with UV and then mixed with unirradiated 58-161,the number of prototrophs is usually no greater,and is often less,than in the control mixture. It seems to me that these experiments show that there is a qualitative difference between the two mutants and that,while 58-161 probably is a gene donator,W 677 is a gene acceptor. If this is so,it looks as if there might be mating types among the K 12 mutants but I presume the geneticists have already looked for this without success. Spicer is letting me have some more recombining strains which you sent him and I will try the effect of streptomycin on them. I hope to publish what I have done so far in the Jour.Gen Microbiol. in more detail and will,of course,acknowledge your gift of the K 12 mutants there. Incidentally,the supernatant fluid of broth cultures of irradiated 58-161 is inactive in recombination although the whole culture,before centrifuging,is highly active. It therefore looks as if the extruded genetic material remains adherent to the cell and that the use of filtrates will not prove effective in the case of K 12 anyway.

I hope life is being good to you and that you enjoy being back in Italy.

Yours sincerely,

William Hayes

(Dr.William Hayes)